

WHAT IS CLAIMED IS:

1. A semiconductor integrated circuit provided with a PLL circuit comprising:

a voltage-controlled oscillator which oscillates in the frequency depending on an applied control voltage; and

a phase comparator which compares a phase of an oscillation output signal of said voltage-controlled oscillator with a phase of a predetermined frequency, wherein said PLL circuit includes said voltage-controlled oscillator applied an output voltage of the circuit which outputs a voltage depending on a phase difference based on an output of said phase comparator and is capable of controlling oscillation frequency of said voltage controlled oscillator,

wherein said semiconductor integrated circuit further comprising:

a plurality of voltage-controlled oscillators having different center frequencies of the frequency variable range to provide continuous or overlapped frequency variable range with each other; and selecting means to select one voltage-controlled oscillator to the fixed operation enabling condition from a plurality of voltage-controlled oscillators.

2. A semiconductor integrated circuit provided with a PLL circuit comprising:

a voltage-controlled oscillator which oscillates

in the frequency depending on an applied control voltage; and

a phase comparator which compares a phase of an oscillation output signal of said voltage-controlled oscillator with a phase of a predetermined frequency, wherein said PLL circuit includes said voltage-controlled oscillator applied an output voltage of the circuit which outputs a voltage depending on a phase difference based on an output of said phase comparator and is capable of controlling oscillation frequency of said voltage controlled oscillator,

wherein said voltage-controlled oscillator comprising:

a plurality of resonance type oscillators respectively including a resonance circuit having inductor and capacitor to provide different center frequencies of frequency variable range; and

a selecting unit for fixedly selecting a resonance type oscillator from a plurality of resonance type oscillators.

3. A semiconductor integrated circuit according to claim 2, wherein a plurality of said resonance type oscillators provides the continuous or overlapped frequency variable range.

4. A semiconductor integrated circuit according to claim 2,

wherein said selecting unit comprises a fuse

circuit including a plurality of fuses corresponding to a plurality of said resonance type oscillators, wherein one of fuses of said fuse circuit is broken in connection or conductivity and thereby the power source voltage is supplied only to one resonance type oscillator among a plurality of said resonance type oscillators.

5. A semiconductor integrated circuit according to claim 2, wherein said selecting unit includes a selector circuit, and

wherein said selector circuit supplies an output of one of said resonance type oscillators to said phase comparing circuit depending on the control signal to shut off the outputs of the other resonance type oscillators.

6. A semiconductor integrated circuit according to claim 4,

wherein a plurality of said resonance type oscillators respectively include transistors for power source supply, and

wherein said fuse circuit is capable of making conductive the power source supply transistor of the resonance type oscillator corresponding to the broken fuse and making non-conductive the power source supply transistor of the resonance type oscillator corresponding to the non-broken fuse.

7. A semiconductor integrated circuit according

to claim 4,

wherein the output sides of a plurality of said resonance type oscillators respectively include the buffer circuits, and

wherein said fuse circuit sets, to the operation enabling condition, only one buffer circuit corresponding to the resonance type oscillator to which the power source voltage is supplied.

8. A semiconductor integrated circuit according to claim 6,

wherein said inductor includes a spiral type inductor formed of the wiring formed in the spiral shape on a semiconductor substrate, and

wherein said capacitor includes a variable capacitance diode formed of the PN-junction connected in an inverse direction.

9. A semiconductor integrated circuit according to claim 7,

wherein said inductor includes a spiral type inductor formed of the wiring formed in the spiral shape on a semiconductor substrate, and

wherein said capacitor includes a variable capacitance diode formed of the PN-junction connected in an inverse direction.

10. An optical transfer unit on semiconductor substrate comprising:

a multiplexer for multiplexing a plurality of

low-speed data signal inputted from an outside of a chip to output such data signal as a high-speed data signal; and

a PLL circuit providing the operation clock to said multiplexer based on the clock inputted from the outside,

wherein said PLL circuit comprising:

a plurality of voltage-controlled oscillators including a plurality of resonance circuits having a plurality of inductors and capacitors to oscillate at the frequency corresponding to the control voltage to be applied in order to provide different center frequencies of frequency variable range and continuous or overlapped frequency variable range in different center frequencies;

a selecting unit for selecting any one oscillator from a plurality of said voltage-controlled oscillators; and

a phase comparator for comparing the phase of the oscillation output signal of the selected voltage-controlled oscillator with the phase of said clock,

whereby an output voltage of the circuit for supplying a voltage depending on the phase difference based on an output of said phase comparator is applied to said selected voltage-controlled oscillator as the control voltage.

11. A semiconductor integrated circuit provided

with a PLL circuit comprising:

a voltage-controlled oscillator which oscillates in the frequency depending on an applied control voltage; and

a phase comparator which compares a phase of an oscillation output signal of said voltage-controlled oscillator with a phase of a predetermined frequency, wherein said PLL circuit includes said voltage-controlled oscillator applied an output voltage of the circuit which outputs a voltage depending on a phase difference based on an output of said phase comparator and is capable of controlling oscillation frequency of said voltage controlled oscillator,

wherein said voltage-controlled oscillator comprising:

a plurality of resonance oscillators including resonance circuits having a plurality of inductors and capacitors and providing different center frequencies of the frequency variable range;

a first selecting circuit which is capable of selecting the predetermined number of clocks among a plurality of clocks provided from a plurality of said resonance oscillators; and

a second selecting circuit which is capable of selecting one clock among the predetermined number of clocks based on the information which is capable of being set from outside.